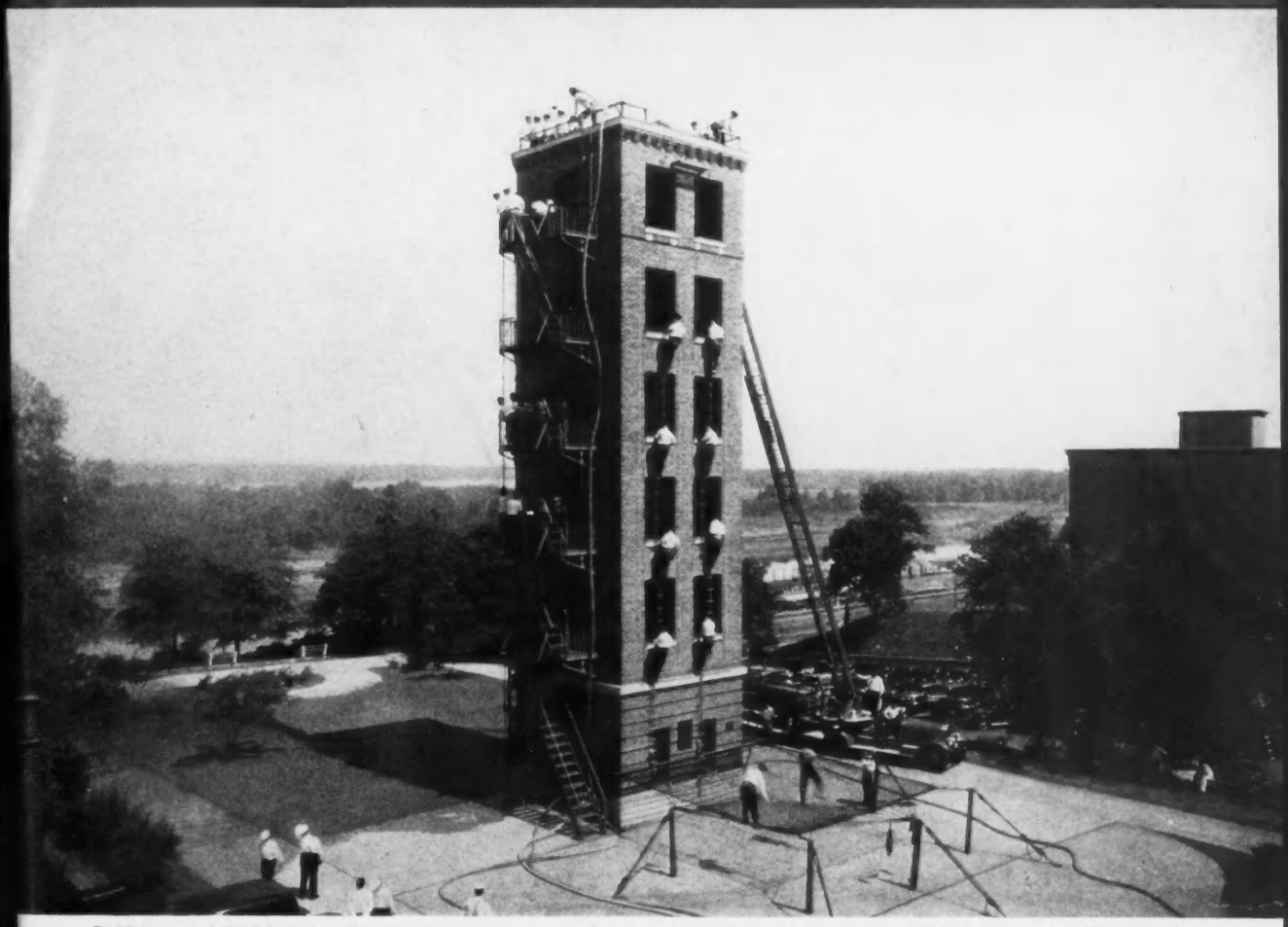
Volunteer Firemen

Professional Journal of the Volunteer Firemen's Section



Drill tower of the Memphis Fire Department, scene of the annual conference sponsored by the Fire Prevention Department, Western Actuarial Bureau, for fire department instructors and fire training leaders.

State and City Fire Schools

Also in this issue—Friction Loss in a Nutshell!
Hose and Hose Couplings—Fighting Factory Fires

Volume 5, Number 1 BOSTON, MASSACHUSETTS January 1938

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HORATIO BOND Managing Editor

OUR new dress this month is in part a celebration of our embarkation, with this issue, on a fifth volume of VOLUNTEER FIREMEN. In the few years the Volunteer Firemen's Section of the National Fire Protection Association has been functioning, it has built up the circulation of this magazine until now it is the greatest in the fire field. Over 26,000 copies of this issue will be printed and distributed. That is a source of satisfaction to us and we believe it should be to our readers who, in the last analysis, have made it possible.

We're proud of the good opinion of our readers which comes to us in many unsolicited forms. For example, a few months ago we wrote a routine reminder to a Texas fire department about renewal of membership. With the dues remittance came an explanation. "The delay was due to not having had a business meeting to compile these names. It is our desire never to be without this splendid paper."

From a North Carolina department comes a letter saying how its members have enjoyed issues of VOLUNTEER FIREMEN they have received. "The suggestions we get from them are very helpful and I am only sorry that we have not belonged to the association long ago."

A lot of our members feel this way after a few months in the fold. If your department is not a member, you may assure yourself that you will be doing all the boys a favor by suggesting it. The secretary of a Nebraska department sends in his department's application saying, "I have never let up trying to put this across since I have been secretary for the last five years. I think it a very good little paper."

We know how hard it is sometimes to raise membership dues. A New Mexico department recently informed us they were looking forward to joining as soon as they get their new pumper paid for.

That's real appreciation. In return, we editors must make VOLUNTEER FIREMEN just as practical and useful a publication as possible. We hope many more departments will join us as we get into this fifth volume. We'll look forward to welcoming them, *soon*.

Volunteer Firemen

Volume 5 Number 1

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-THE VOLUNTEER FIREMAN

Warren Y. Kimball Associate Editor

FREQUENT inquiries and reports regarding methods used by fire departments in raising money to finance their operations testify to the general interest in that subject. Based on a report in the San Francisco *Chronicle*, probably no fire department has been more successful in big business than that of Larkspur, California (population 1,200), which owns and operates a local "Rose Bowl." Because this place for public sports events is operated by the firemen, the Larkspur business men and home owners have not paid taxes for fire protection since 1908. Profits of the bowl have built a modern fire station, keep the department equipped with the most modern apparatus which includes a new $13,000 pumper, pays the salaries of 20 firemen and have built up a sick benefit fund of over $22,000.

In addition to building up their own department the Larkspur firemen have generously turned over to the fire department of the neighboring city of Corte Madera the concession for selling refreshments at the bowl. Out of the profits of this stand the Corte Madera Fire Department is operated and that community recently paid for its City Hall with part of the nickles and dimes that have rolled across the counter.

LAST month 8 departments with 172 men joined the Volunteer Firemen's Section for the first time. In addition 39 fire departments with 866 men renewed membership bringing the total for the Section to 554 departments and 12,424 firemen. The following departments are newly enrolled:

Independence Volunteer Fire Department, Independence, Louisiana.

Marine City Fire Department, Marine City, Michigan.

Moss Point Fire Company, Moss Point, Mississippi.

Clinton Fire Company, Clinton, New Jersey.

Colonia Fire Company No. 1, Colonia, New Jersey.

McCamey Volunteer Fire Department, McCamey, Texas.

Cassville Volunteer Fire Company, Cassville, Wisconsin.

Bronte Fire Department, Bronte, Ontario, Canada.

State and City Fire Schools

Volunteers Appear to Be Getting Best of It in 1937 Programs—Large Corps of Fireman-Instructors Increases Total Number Given Training

THE news is available just as we go to press that President Roosevelt has released some $14,000,000 of federal funds for vocational education. A part of these funds may be applied to firemen's training by municipalities as well as by states. This is the result of a campaign successfully carried out by the American Municipal Association. That organization represents the various state leagues of municipalities, many of which are actively cooperating with local associations of firemen and fire chiefs in state and regional training programs. Over 50,000 firemen were reached by existing training programs undertaken by states and cities during 1937. This splendid record played no small part in the success of the efforts to include training in municipal service among the subjects to which the federal government is authorized to give education aid. Policemen and other public employees will benefit along with firemen in more and better training facilities.

Firemen's training schools this year have placed a strong emphasis on the training of a large corps of instructors. These have greatly aided in extending the program to a large number of men, particularly among the volunteer and part paid fire departments. In fact, the state training programs are in many cases offering volunteers more and better training courses, particularly in advanced subjects, than most paid firemen can get in their own fire department school. Included for comparison in this summary is data on the work of fire department schools in principal cities of the United States and Canada.

Twelve years ago last summer, annual short courses for firemen were held in two states, Illinois and Iowa. This year twenty-five states have held courses running anywhere from one day to a week which are open to firemen throughout the state and at which a total of 5,245 men were registered. A school was held for the first time this year in Arkansas. There are certain definite advantages of a large state school which cannot be obtained through any other type of program. Outside experts may be obtained as speakers and the schools may be a forum in which the general problems of training throughout the state may be discussed. In many places the annual school is becoming more and more an advanced school primarily for instructors.

The annual schools were supplemented by some 271 regional schools. Regional school programs were undertaken in 21 states and provinces and had a total attendance of 22,825.

A number of states and provinces have traveling instructors who are available to give instruction in any fire department of the state. In some cases these instructors are employed by the fire marshal's office or state department of education. Others are supported by state firemen's associations and still others by fire insurance organizations. Among the states having a program including traveling instructors are Arizona, California, Illinois, Indiana, Missouri, Ohio, Texas, and the provinces of Alberta and Quebec.

The program in a number of states is geared to the principle of developing a large number of competent instructors. These men are not outsiders, but active members of fire departments. The programs plan to have a well trained instructor in each zone or district of the state and eventually to develop several men in every fire department who can give instruction in various details of firemanship training. Programs aimed at this result are under way in Arizona, Connecticut, Louisiana, Massachusetts, Michigan, Pennsylvania, New Jersey, Oklahoma, Texas, Virginia and West Virginia. Other states, such as Illinois, Indiana and North Carolina, to mention only a few, are leaning strongly toward this sort of program by giving advanced instruction pri-

ANNUAL SHORT COURSES

(State Fire Colleges and Instructors' Courses)

State	Years Held	Cities Represented	1937 Attendance
Alabama	2		34
Arkansas	1		40
Colorado	7		360
Florida	8	51	150
Georgia	3	60	395
Illinois	13	144	453
Indiana	4		436
Iowa	13	82	395
Kansas	2	37	103
Kentucky	3		83
Louisiana	8	47	55
Maryland	8	45	136
Massachusetts	5	16	19
Michigan	9		154
Minnesota	10		200
New Mexico	8	28	105
North Carolina	9	73	271
Ohio	8	33	105
Oklahoma	4	12	27
Oregon	—	—	—
South Dakota	8		479
Texas	8	209	469
Washington	7		500
West Virginia	7	51	151
Wyoming	5		125
Total Attendance			5,245

Chief T. P. Treadwell, Fort Collins, Colorado

Instruction by company officers is a regular part of the training procedure in most departments with a full-time personnel.

International

The New York Fire Department has unsurpassed facilities for giving basic training to firemen and gave such instruction to 1550 new men this year. A class is shown at pompier drill.

Illinois Fire College

Short courses were held in 25 states for the development of instructors and to provide advanced training.

REGIONAL SCHOOL PROGRAMS

	No. Schools	Attendance
British Columbia	4	235
Connecticut	9	223
Georgia	3	180
Indiana	70	1,972
Iowa	6	505
Louisiana	11	145
Massachusetts	15	443
Minnesota	9	1,247
Missouri	2	266
Nevada	—	—
New Jersey	7	247
New York	15	12,865
North Dakota	—	—
Ohio	2	1,616
Oklahoma	30	333
Pennsylvania	16	400
Utah	18	270
Vermont	3	150
Virginia	7	350
Washington	15	1,000
West Virginia	29	378
Total	271	22,825

CONTACTS BY INSTRUCTORS

	No. Cities	No. Men
Alberta		300
Arizona	38	200
California	18	577
Connecticut		1,600
Delaware	17	274
Illinois	72	925
Louisiana	72	1,000
Massachusetts	267	2,500
Missouri	69	1,200
Nevada	14	243
New York (Nassau Co.)	52	684
Ohio	25	400
Pennsylvania	46	4,601
Quebec	260	5,200
Texas	322	4,500
West Virginia	32	381
Total	1,304	24,585

marily for instructors at their annual or regional schools. In West Virginia and Ohio this idea has been carried a step farther where the central state agency is furnishing an outlined course which a trained instructor can give in his own department. Massachusetts' correspondence course was taken by 150 firemen during 1937.

DURING 1937 fire school work was dropped in only two jurisdictions. South Carolina gave up its annual fire school through lack of interest on the part of fire departments in that state. In the province of Saskatchewan lectures formerly given by the staff of the fire marshal were dropped because of lack of funds. There is no active firemen's training program in Idaho, Manitoba, New Brunswick, New Hampshire, Nova Scotia, Prince Edward Island, Rhode Island, Tennessee and Montana. In the states of Maine, Nebraska and Wisconsin, and the province of Ontario, firemen's training programs are in the process of being organized and the fire chiefs, firemen and educational authorities in these territories are holding conferences to evolve working plans. During the year existing programs in the states of California, Illinois and Michigan were greatly improved and strengthened. From this it is apparent that all but a few of the less populous states and provinces have established programs. Few firemen are without some training facilities and training work shows a steady and healthy growth.

Agencies sponsoring fire schools or cooperating to make them possible include state firemen's associations, fire chiefs' associations, county or regional firemen's organizations, state and provincial fire marshals, state colleges and universities, the Fire Service Extension Committee of the U. S. Chamber of Commerce Fire Waste Council, insurance inspection bureaus, state leagues of municipalities, and similar organizations interested in increasing the efficiency of firemen. Departments of vocational and industrial education in the various states have been of particular assistance in most of the programs. These departments are set up to train instructors in teaching methods and many other details and have had funds available for the purpose. The $14,000,000 mentioned in the opening paragraph of this article refers to money appropriated by the federal government which may be spent under the direction of vocational education departments in states which have matched the federal funds. Most states have taken advantage of this federal aid in this important field of education.

Municipal fire departments wishing to set up a program of training can secure the assistance of federal money

Fire Department Drill Schools

Typical Activities in Principal Cities

	INSTRUCTION BY COMPANY OFFICERS	COMPANY DRILLS AT DRILL SCHOOL		BASIC DRILL COURSE FOR NEW MEN		ADVANCED COURSES	
	Average No. Hours Weekly	No. Cos.	Times Drilled	No. New Men	Men from Other Cities	No. Men	Men from Other Cities
Akron, O.	1	13	1	0	0	0	0
Atlanta, Ga.	1	20	2	0	0	90	0
Baltimore, Md.	2	95	1	37		1,331	
Birmingham, Ala.	6	24		4	0	54	0
Boston, Mass.	2	90	1	94	1	167	0
Buffalo, N. Y.	1	55	2	42	5	66	6
Chicago, Ill.	8	183	1	182	0	22	0
Cincinnati, O.	6	54	3-4	38	0	100	
Columbus, O.	6	0	0	0	0	0	0
Dallas, Tex.	3	34	2	30		350	
Denver, Colo.	4	29	4	24	0	66	12
Detroit, Mich.	6	98	1	46	19	220	0
Ft. Worth, Tex.	2	24	10	10	0	255	0
Houston, Tex.		32	2	23	0	0	0
Jacksonville, Fla.	4					100	0
Louisville, Ky.	6	8	1	35	3	320	20
Los Angeles, Calif.	3			225	0	253	3
Manchester, N. H.	1	13	1	0	0	18	0
Milwaukee, Wisc.	2	0	0	44	13	613	13
Minneapolis, Minn.	4	33	1	19	0	184	0
Memphis, Tenn.	3	26	12	32	8		
New Orleans, La.	6	58	2	21	0	0	0
New York, N. Y.	5½	360		1,550	28	2,028	6
Oakland, Calif.	6	0	0	0	0	0	0
Philadelphia, Pa.	6	108	2	0	0	0	0
Portland, Me.		16	2	12	0	120	0
Portland, Ore.	4	49	2	32	0	165	0
Providence, R. I.	6	36	2	15	25	0	0
Raleigh, N. C.		7	1	5	0	0	0
Rochester, N. Y.		0	0	0	0	0	0
St. Paul, Minn.	2	35	10	0	0	400	0
San Antonio, Tex.	3	21	24	11	0	267	0
Seattle, Wash.	2	47	5	0	0	0	0
Springfield, Mass.	3		1	24	0	5	26
Toronto, Ont.		34	4	14	2	650	0
Washington, D. C.	6	47	2	40	17	40	0
Wilmington, Del.	1	12	13	18	0	150	0
Worcester, Mass.	3	30	2	28	0	120	0
Totals				2,655	121	8,154	86

through the vocational education departments as the result of a recent ruling of the U. S. Department of the Interior. J. W. Parry, who is in charge of the public service training in the State of Michigan (including that state's active firemen's training program), reports that in his state the state board of vocational education can finance wholly from federal and state funds courses of training installed locally or on a regional basis up to 75 per cent of the cost of the instruction. The municipality or regional agency wishing this aid must raise 25 per cent of the cost of instruction and supply quarters for the schools, together with materials and supplies. This situation is probably typical of the situation in other states, details on which can in any case be obtained from the state director of trade and industrial education.

DRILL work done by the large city fire departments is of interest to many volunteer and part paid fire departments who may be considering sending one or more of their members to some nearby large city to take the drill school course offered there. An accompanying table lists the work done by fire department drill schools in 40 typical cities. This relatively small group of cities gave basic drill school training to 121 men from other cities and allowed firemen from other cities to the number of 86 to participate in advanced courses of instruction offered.

Nearly all cities with an established drill and training program have the following set-up. New men are given a basic drill course which in general covers elementary work with hose, ladders and salvage equipment and other tools. Company officers in most departments having a training program are required to give a certain number of hours' instruction each week to the members of both shifts. This instruction may be of a rather elementary sort and deal only with such matters as the location of street hydrants and fire alarm boxes, or it may be very complete and require men to report on inspections and discuss fire fighting details in buildings in the district.

NEARLY all departments which have a drill school require each fire company to report there to drill as a unit under the supervision of the drillmaster. In the accompanying tabulation there is only one city listed which does not follow this practice where it has an otherwise well balanced program. In Milwaukee, in lieu of company attendance at drill school, a certain number of men are assembled at the drill school each day. These men are selected, one each from eight school districts, which rotates the attendance at the drill tower in such a way that each member is brought to the drill school at least seven times each year.

In so far as a comparison can be made, it appears that the individual fire department schools have been somewhat slower to adopt advanced training than have some of the state and regional schools. A number of large cities still have no advanced training other than that offered in a single lecture course given once a year. A few, notably Detroit and Los Angeles, have gone into advanced work extensively.

Space limitations make it necessary to tabulate the programs by states and cities and unfortunately do not permit this story to cover much more than the barest facts about the work in each. Readers who are interested in receiving training for themselves or for their own department are urged to get in touch with the local committees which are sponsoring their state or regional program. The accompanying tabulations will indicate work being done.

Friction Loss—In a Nutshell!

Just a Few Simple Figures in Round Numbers to Remember and You Will Be Able to Make Most Friction Loss Calculations with Ease

By Warren Y. Kimball

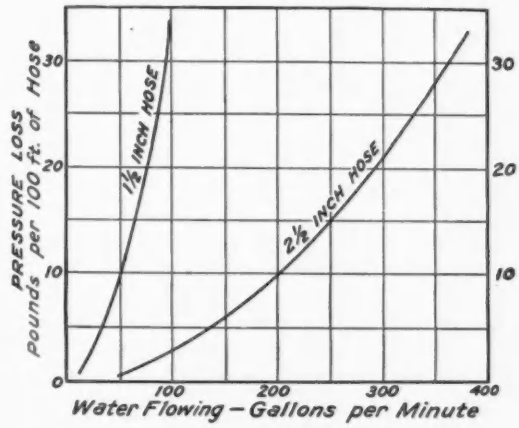
FRICTION loss in hose streams is the loss of pressure which occurs due to the resistance of the inside of the hose to the flow of water. Friction is usually expressed in pounds of pressure lost per 100 feet of hose. With any given amount of water flowing there is more friction loss in small hose than in large hose. This is because water must flow faster in the smaller hose and there is more "rubbing" against the inside lining of the hose and other internal friction.

It may be remembered that a flow of 200 gallons of water a minute through 2½-inch hose causes 10 pounds friction loss per 100 feet of hose while with 1½-inch hose a flow of only 50 gallons a minute causes the same friction loss. So much greater is the friction loss in small hose that in the fire service it would be impractical to put 200 gallons of water through a line of 1½-inch hose because the friction loss in only 100 feet of hose would amount to 121 pounds. However, in American fire service, 1½-inch hose is used to reduce water damage at fires inside of buildings and there is no need to force more water through a line of 1½-inch hose than will go without great friction loss. A ½-inch nozzle tip operating at 45 pounds on a 1½-inch line keeps the discharge well within the practical limits of that size hose. This results in 10 pounds friction loss per 100 feet of hose, the discharge being 50 gallons per minute.

FRICTION LOSS AND DISCHARGE
Standard Fire Streams

	1½ inch Hose		2½ inch Hose		
Size of nozzle tip in inches	½	⅝	1	1⅛	1¼
Nozzle pressure in pounds per square inch	45	45	45	45	40
Discharge in gallons per minute	50	78	200	250	290
Friction loss in pounds per 100 feet	10	20	10	15	20

Except at rural fires and other places where longer lines of 1½-inch hose are sometimes required to utilize limited water supplies, the question of friction loss in 1½-inch hose is usually less important than that in 2½-inch hose. A 2½-inch hose stream with a 1-inch nozzle tip delivers 200 gallons of water a minute at the usual 45 pounds nozzle pressure and only causes about 10 pounds friction loss in each 100 feet of hose. When, however, you put on a 1⅛-inch nozzle tip you are discharging 250 gallons a minute at the same nozzle pressure and your friction loss jumps up to 15 pounds for each 100 feet. If you have a big fire and are using a 1¼-inch nozzle you immediately have over 20 pounds pressure loss per 100 feet of hose, because you have a stream delivering nearly 300 gallons of water a minute. Because of friction loss, some fire departments follow certain rules in selecting nozzle tips. On short lines they use a 1¼-inch tip, on lines of medium length a 1⅛-inch tip, and for lines of over 500 feet a 1-inch tip. For example, a 300-foot line with a 1¼-inch tip, a 400-foot line with a 1⅛-inch tip, and a 600-foot line with a 1-inch tip would each have about the same friction loss of 60 pounds.



COMPARATIVE FRICTION LOSSES in 1½ inch and 2½ inch Rubber Lined Hose

An interesting graph to visualize friction loss calculations suggested by Raymond Schuermann, Engineer, Missouri Inspection Bureau. Note how rapidly friction losses in 1½ inch hose increase at discharges greater than 50 gallons per minute.

YOU HAVE the dope on "friction loss" in a nutshell if you just learn the figures in the accompanying table. It is easy to tie up friction losses of 10, 15 and 20 pounds with nozzle tips of 1, 1⅛ and 1¼ inches respectively. The rest of the figures will fall easily into place. With these figures fixed in mind, it will be no trick at all to find the pressure at the engine or hydrant required to give a good stream with nozzles of varying sizes.

Take for an example a 300-foot line of 2½-inch hose with a 1⅛-inch nozzle. What engine pressure would be needed to give a good stream? For the 1⅛-inch nozzle the friction loss is 15 pounds per 100 feet of hose. Three times 15 equals 45 pounds friction loss to which is added 45 pounds nozzle pressure giving a required engine pressure of 90 pounds.

This assumes working at the ground level. However, if the line is to be used above the ground level about 5 pounds extra pressure is needed for each story the water is to be forced above the ground. This is because the water must be pumped upstairs or uphill against its own weight. About 4⅓ pounds pressure is needed to overcome the downward force of a 10-foot column of water. To pump water up a 50-foot hill 21 pounds extra pressure is needed exclusive of friction loss and nozzle pressure. Some departments always add 5 pounds to meet slight elevations.

Fighting Factory Fires

Best Practice Is to Pump into Sprinkler System and Go Easy On Use of Hose Lines Which May Take Water from Sprinklers

By Harold S. Walker
(Member, N.F.P.A.)

This is the second of a series of articles by Mr. Walker on Fighting Factory Fires. Mr. Walker is an engineer of the Associated Factory Mutual Fire Insurance Companies and has had over twenty years' experience as a volunteer fireman.

IN FIGHTING fires in sprinklered buildings great reliance can be placed on the automatic sprinklers. The opened heads operate at the very seat of the fire. They are not affected by smoke and have a better chance to put water just where it is needed than do hose streams. Hose streams, of course, have to be directed more or less blindly under conditions where a fire cannot be closely approached.

Well arranged, properly installed sprinklers, however, amply supplied with water rarely fail to control a fire. For 41 years the National Fire Protection Association has kept track of the operation of sprinklers. These systems have successfully controlled 96 per cent of the recorded fires in property equipped with this form of protection. It is, therefore, of the utmost importance that sprinklers be given the first chance at the water supplies.

Sometimes fire burns in a sheltered location which water from the sprinklers cannot reach; under a counter, for example. This often produces much smoke and may open many sprinklers, making it appear that the fire is getting away. Actually under such conditions the sprinklers protect the building and keep the fire from spreading. Sprinklers discharge a deluge of water, much heavier than the heaviest rain. It is applied just where needed and it is very unlikely that the fire will get beyond control.

The previous article discussed how inspections and conferences with plant managers could make it possible for the fire department to take every advantage of any private fire protection available. In a number of large city fire departments the inspection of private fire protective equipment, such as tanks, pumps, yard mains, hydrants and the like are covered in regular inspection work. To supplement this inspection work, however, there has been set up at fire headquarters an assembly of automatic sprinkler valves, alarm devices and other private fire protective equipment, a working knowledge of which is of great importance to the officer of the department who must direct the attack on the fire.

These inspections and displays have been a part of the training program for firemen, and considerable attention has been given to the subject of automatic sprinklers and private fire protection at the state and regional fire schools which have been held in nearly all parts of the country.

Study of the operation of sprinklers at these schools and elsewhere has influenced certain general rules of fire fighting in buildings where automatic sprinklers are provided. For example, it is a standing order in a great many fire departments that either the first or second pumper arriving at a fire must not be used for hose streams, but be connected up so as to pump water directly into the sprinkler system.

To supplement information gained about sprinkler installations during inspections, several of the large fire departments have set up sprinkler valves and other equipment at headquarters for use in training classes and for convenience in studying details of operation.

HERE is what happened in one department shortly after such an order was put in effect. A fire started in a spray booth in a large furniture factory. The fire flashed over lacquer accumulations in the booth with explosive violence and threw flames and burning lacquer dust over a considerable area. When the first firemen arrived the fire had opened a large number of heads, severely taxing the available water supply.

The assistant chief in charge of the fire made a quick survey. He found the finishing room charged with heated smoke and sprinklers operating. He ordered the first pumper connected to the fire department sprinkler connection and the full capacity of the pump was forced into the system. Fifteen minutes later the fire was under control.

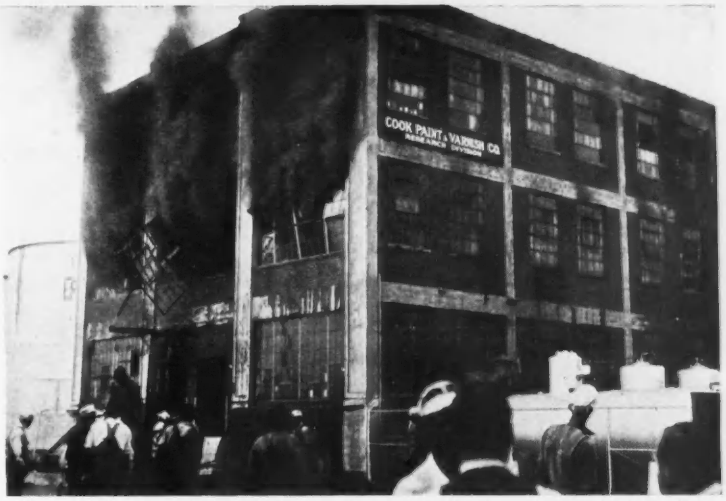
When private protection is laid out provision is usually made for ample supply of water to feed sprinklers. If a fire occurs and opens a large number

of heads there may not be enough water to supply both the sprinklers and hose streams taken from hydrants on the same yard system. There have been plenty of cases on record where a fire has been allowed to get away because this fact was disregarded.

A failure to make the best possible use of water supplies resulted in a serious loss to the sprinklered paint factory pictured at the right. This fire started with an explosion and had been going for 45 minutes when the top picture was taken. The relatively small volume of smoke and water running from the doorway indicate that the sprinklers were operating and holding the fire. Pumpers, hooked up to feed through the fire department connection into the sprinkler system, would have boosted pressures and increased effective work of sprinklers so that small lines and foam available could have controlled the fire. Instead, pumpers were connected to hydrants on the single 6-inch supply main taking the water away from the sprinklers so that the fire got away. As the fire increased in intensity, solvent tanks in the second floor burst, releasing their contents and the burning liquid flowed through the doorway out into the street. Twelve hose streams, seven of them supplied through foam generators, were used to extinguish the fire which was not brought under control until most of the combustible contents of the building were consumed. The loss was about $200,000.

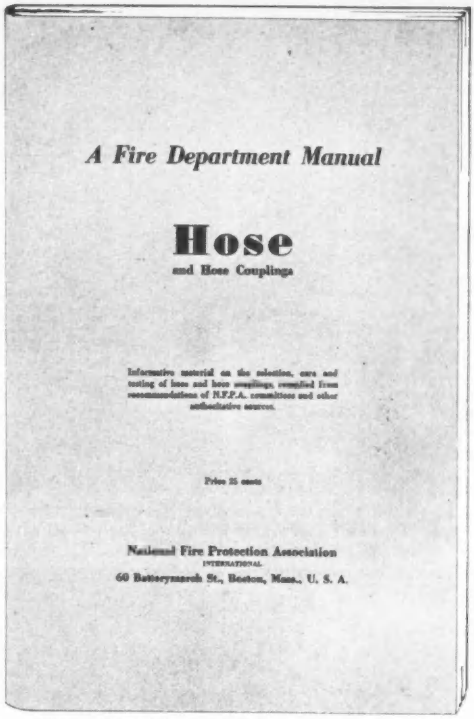
The natural temptation when there are large volumes of smoke is to drown out the fire with large hose streams. Nevertheless in sprinklered buildings it is generally safe at first to withhold the use of large volumes of water, let the smoke out and then attack the seat of the fire with small hose or hand extinguishers, backing such equipment with large lines ready for use.

Early one morning in a clothing factory some wiping rags which had carelessly been left under a table on the third floor of a clothing factory ignited spontaneously. Three sprinklers opened and controlled the fire but were not able to put it entirely out because of its location under the table. The room was full of smoke when the fire department arrived. Two large hose streams were used through the windows from ladders outside the building. The only effect of this operation was to wet down the entire room. The fire damage was only about $400. The water damage to clothing and material on several floors of the building was nearly $40,000.



(Above) Fire Practically Under Control by Sprinklers. (Below) Two Views of Same Fire Ten Minutes Later After Pumpers Took Water From Sprinklers

IN CONTRAST with this experience is a fire which started in a storehouse at a manufacturing plant. On arrival firemen found a fire burning in baled cotton linters. Two sprinklers were keeping the fire from spreading. To prevent unnecessary water damage the fire was attacked with hand extinguishers. As a precaution a large hose line was laid. As soon as they could be handled the burning bales were removed from the building, and any smouldering fire was extinguished. By this good work a potentially large loss was under $500.


A Fire Department Manual
Hose
and Hose Couplings
Informative material on the selection, care and testing of hose and hose couplings, compiled from recommendations of N.F.P.A. committees and other authoritative sources.
Price 25 cents
National Fire Protection Association
INTERNATIONAL
60 Batterymarch St., Boston, Mass., U. S. A.

New N.F.P.A. manual on hose and hose couplings contains 44 pages 6 in. by 9 in., 11 illustrations, sturdy cover, cost 25 cents.

Hose and Hose Couplings

Here's New Fire Department Manual You'll Want to Get

READERS will be interested in a new fire department manual being offered by the N.F.P.A. to its fire department members. The new publication deals with hose and hose couplings from the special point of view of the fire department as a large user of hose equipment. Copies may be obtained for the nominal price of 25c.

Successful fire fighting depends upon adequate fire streams and adequate fire streams depend upon well made and properly maintained hose. Without good hose organized fire protection would revert to the bucket brigade days. With active training programs for firemen being carried on in most large cities and in annual fire colleges or regional schools in most states, it has seemed desirable to assemble in one publication the fundamental information on fire hose which has accumulated in 42 years of N.F.P.A. activity. The new manual is the result. In it for the first time all of the essential information on the selection, care and testing of hose is brought under one cover.

Knowledge of how to treat hose in its daily use and in storage is important in obtaining the maximum of efficient service from it. Almost the first thing that new recruits to the department are taught is the care of hose. It would pay to get copies of this manual to put in the hands of every member of the company or department so that no detail which would promote the efficient service of hose is overlooked. The manual contains information valuable for reference even to experienced fire chiefs and other fire department officers. It is also just the thing to use to convince the local authorities who control fire department appropriations that good hose in adequate amounts is needed. Furthermore, it is a useful publication to put in the hands of the city purchasing agent or the committee which buys the hose.

Hose is one of the most essential forms of equipment purchased by a fire department and one of its largest expense items following closely behind the cost of major apparatus (and, in paid fire departments, salaries). In order to guarantee the condition of hose for making fire streams available without delay and in order to avoid apprehension as to its ability to stand up under severe fire conditions, the manual points out that it is necessary to (1) buy properly made hose, (2) protect hose during use and storage, (3) give the hose frequent attention.

GOOD materials are the basis for good fire department hose. Cotton must be a good quality and properly woven. Of major importance is the quality of the rubber. Its chemical and physical properties must be such that it will not deteriorate rapidly due to age and that it will properly stand up against conditions of hard use which work at some fires makes inevitable. The inside surface of the rubber must be smooth so as to produce low friction loss.

The manual points out that there are few products which can be bought with as much assurance of good quality as standard cotton rubber lined fire hose. The manual explains how this high quality has been maintained through the adoption of national standard specifications, and the labeling of hose by Underwriters' Laboratories, Inc.

One of the first specifications ever drawn by the N.F.P.A. (as far back as 1897) was a specification for fire hose. This specification has been kept up to date and the current edition bears the endorsement of such distinguished organizations as the American Society for Testing Materials, the American Standards Association, the National Board of Fire Underwriters, the Associated Factory Mutual Fire Insurance Companies, the International City Managers' Association, and the Federal Specifications Board of the United States Department of Commerce. A copy of these specifications in a form suitable for use by cities in purchasing hose is included in the manual.

The new hose manual was announced to N.F.P.A. members in the last monthly News Letter. Over 1,000 have already been distributed to fire department members and others who have written in for copies. Please note that a single copy is free to any member company or department, or to individuals holding N.F.P.A. membership. If your chief or secretary hasn't written for a copy it isn't too late for him to do so. Or, send 25 cents for a personal copy. If you require a substantial number of copies, reduced prices can be given in lots of 100 or more.

VITAGUARD

Fire Alarm System for Volunteer Fire Departments

The four essential elements of the simplest and most effective fire alarm system are illustrated in this diagram.

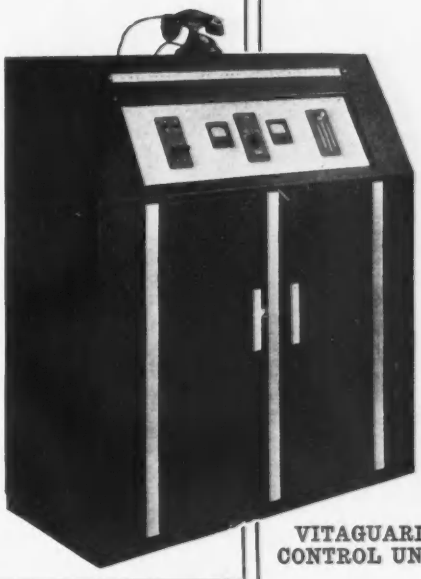
1. **FIRE ALARM BOXES.** A Vitaguard box when operated transmits four complete repetitions of its location number, which automatically sounded by the public alarm, directs the firemen to the scene of fire.

2. **PUBLIC ALARM.** The Diaphone compressed air horn is the most powerful sound producing device yet applied to fire alarm service. It has great sound penetration, a distinctive tone, and the ability to sound fast coded signals in clear, sharp blasts. There is no lag in the signal, the full volume of sound is instantly emitted.

3. **CONTROL UNIT.** This unit includes a recording register, code signal transmitter, storage battery, rectifier, protective and testing equipment, and line terminals. The batteries are automatically maintained in a fully charged condition. All instruments are automatically wound.

4. **CIRCUIT.** The simple closed metallic circuit consists of one wire attached to public alarm and control unit at the fire station, connects with all fire alarm boxes and returns to fire station. The system may include from one to forty boxes.

PUBLIC ALARM
Diaphone Horn
Projecting Above Roof



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CONTROL UNIT

Outstanding Features are — Simplicity . . . Low Initial and Maintenance Costs . . . Rugged Construction . . . Automatic Operation of Alarm Equipment . . . May be Installed by Local Electrician

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NEWTON UPPER FALLS MASSACHUSETTS

The Federal Siren

THE FEDERAL FIRE SIREN is the best paying investment any town with a volunteer fire department can make. Its signal call is like no other sound. Its variable tone, from a piercing shriek to a deep guttural roar, commands action and speed in response.

Millions upon millions of fire loss could be saved if no time was lost between discovery of fire and sounding of alarm. Hundreds of towns in every state now use the Federal Fire Siren.

THE FEDERAL VERTICAL SIREN

● Federal engineers have designed a siren to distribute sound in a wide range in all directions—Rugged in construction to withstand all kinds of abuse—Entirely weatherproof housing—Finished in Red Duco or Aluminum—Withstands sleet, rain, hail and dust storms—Equipped with special high speed, ball bearing motor—Approved by the National Board of Fire Underwriters—Used in Many Villages, Towns and Cities.

WRITE FOR BULLETIN NO. 55

FEDERAL ELECTRIC COMPANY, 8717 So. State St., Chicago

Here's Easy Way to Join the Volunteer Firemen's Section

National Fire Protection Association

THE MEMBERSHIP plan for the Volunteer Firemen's Section is designed to give every member of a fire company advantages of membership in the National Fire Protection Association (International), long known as a clearing house of authoritative fire fighting and fire prevention information. The fire company or department, as a member, receives at its headquarters a complete set of the many interesting N.F.P.A. publications as issued, including the profusely illustrated *Quarterly* magazine. In addition and without additional cost, the magazine VOLUNTEER FIREMEN is sent to the home addresses of 20 firemen each month. Fire department membership in the N.F.P.A. costs only $10 per year. If more than 20 firemen want the magazine, an additional 50 cents apiece should be sent in for each man in excess of 20.

PERHAPS the simplest way to finance N.F.P.A. membership is to vote the annual dues from the company treasury. However, because N.F.P.A. membership is a recognized educational activity, many fire departments subscribe for their men with money from the regular fire department appropriation. Other departments collect 50 cents from each man who is to receive VOLUNTEER FIREMEN until at least the minimum N.F.P.A. membership fee of $10 is reached.

BECAUSE the National Fire Protection Association is widely known as a source of information vital to progressive fire departments, many companies and departments find that outsiders, either individuals or civic organizations interested in the department, will contribute all or part of the membership fee.

All that is necessary for N.F.P.A. membership is to send in the annual dues ($10 for a department of 20 men or less) with names and addresses of firemen who are to receive VOLUNTEER FIREMEN.

NEW CATALOGUES

This department is for the convenience of readers who wish to be advised of new products or services in the fire field. When writing for catalogues please mention VOLUNTEER FIREMEN.

Aluminum Ladder Co., Tarentum, Pa. 16-page, 2-color catalogue describing aluminum ladders for fire department and industrial use.

American-Marsh Pumps, Inc., Battle Creek, Mich. Bulletin No. 75 (Edition No. 4). Data on Barton pumps and fire streams.

The Automatic Hose Coupling Co., 118 Central Street, Waltham, Mass. Folder describing "Featherweight" (aluminum alloy) and "Automatic" Couplings.

W. S. Darley and Co., 2810 Washington Blvd., Chicago, Ill. 100-page catalogue "Everything for Fire Departments," describing a complete line of fire apparatus and pumps.

Federal Electric Co., 8717 South State St., Chicago, Ill. Bulletin No. 55. Complete details of Federal sirens.

Elkhart Brass Manufacturing Co., 1302 West Beardsley Ave., Elkhart, Ind. Illustrated folder describing Mystery Fog Nozzle.

The Fyr-Fyter Co., Dayton, Ohio. Four-page illustrated leaflet, describing 5-gallon farm fire extinguisher (new shape hand pump type with antifreeze charge. Labeled by Underwriters' Laboratories, Inc.)

Gamewell Co., Newton Upper Falls, Mass. "Vitaguard," a manual, 40 pages. A complete description of the Vitaguard fire alarm system for volunteer fire departments and industrial plants.

Koehler Mfg. Co., Marlboro, Mass. Full information on Wheat Spotlight, a light weight 25,000 candlepower spotlight or floodlight for firemen.

Mine Safety Appliances Co., Braddock, Thomas and Meade Sts., Pittsburgh, Pa. Two-page bulletin describing MSA Explosimeter, a pocket-size indicator which shows whether gas concentrations are dangerous.

Pacific Fire Extinguisher Co., 142 9th St., San Francisco, Calif. 160-page, 2-color illustrated catalogue "Modern Fire Control Products" which, in addition to describing fire protection appliances sold by the company, contains much interesting and valuable fire protection information.

Southern States Iron Roofing Company, Savannah, Ga. Pamphlet and catalogue describing the fire protective qualities of "Everwear" galvanized steel roofing.

A Problem Question
FOR JANUARY

Suggested for discussion at company and department meetings this month

74

How may the friction loss which accompanies the use of heavy streams supplied by 2½-inch hose be overcome?

Watch for the answer in the next issue of VOLUNTEER FIREMEN

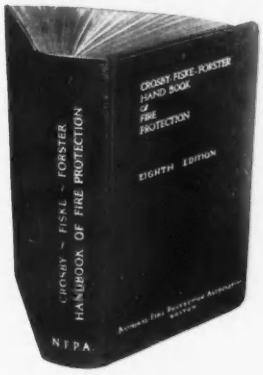
Discussion Subject

73

Q. How does the friction loss in 1½-inch hose compare with that of 2½-inch hose?

A. With 50 gallons of water flowing through a ½-inch tip the friction loss in 1½-inch hose is about 10 pounds per 100 feet, or approximately the same as that of 2½-inch hose discharging 200 gallons a minute through a 1-inch tip. With larger quantities of water flowing friction loss in 1½ inch hose mounts even more rapidly than in 2½-inch hose. *For full discussion see page 7.*

OVER 5000 N.F.P.A. HANDBOOKS SOLD



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1154 pages; 4¼ x 6½
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National Fire Protection Association
60 Batterymarch Street, Boston

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American
BAR-REINFORCEMENTS
. . . more than
DOUBLE
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Chain Mileage
● WEED American Bar-Reinforced Tire Chains are safer. And they wear more than twice as long. WEED American Bar-Reinforcements on cross chains stop forward, backward and side skids—provide twice the metal to wear through. Metal is "Weedalloy" — tough, wear-resisting, developed especially for WEED Tire Chains. Side chains welded and case-hardened. Patented Lever-Lock End Hook simplifies putting on and taking off.
SAVE on tire chains by using WEED American Bar-Reinforced.
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Tells how proper installation increases chain mileage 25% to 50%. Send postcard for yours.
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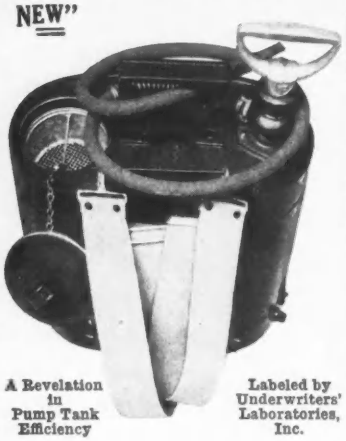
Licensed to manufacture and sell Bar-Reinforced Tire Chains under United States and Canadian Letters Patent: American Chain & Cable Company, Inc.; The McKay Co.; The Hodell Chain Co.; Pyrene Mfg. Co.; Dominion Chain Co., Ltd.; and Pyrene Mfg. Co. of Canada, Ltd.

"THE NEW" FYR-FYTER PUMP TANK



A Revelation in Pump Tank Efficiency

Labeled by Underwriters' Laboratories, Inc.

Write for complete description of this new, sturdily built, powerful, easily operated, Fyr-Fyter Pump Tank. — The acme of perfection in Pump Tank construction.

WANTED—DEALERS

If you are interested in selling approved fire protection devices either as a part-time addition to your present income or as a permanent vocation, send for complete details to

THE FYR-FYTER COMPANY

Dept. 20-25 DAYTON, OHIO

These 6 STAR FEATURES CAN BE FOUND ONLY IN THE ELKHART Mystery FOG NOZZLE

No other nozzle has them all!

1. **Rubber bumper insures continued effectiveness as fog nozzle . . . protects against blows which may bend barrel and render it useless.**
2. **Smooth action; will not bind or jam.**
3. **Complete shut-off; will not leak.**
4. **No holes to clog.**
5. **No engagement screw to fall out and cause loss of nozzle control.**
6. **Leak-proof packing compensates for wear. These features are important.**

For your own protection, see that the fog nozzles you buy are genuine Elkhart Mystery Nozzles.

MADE in SIX SIZES for ALL CONDITIONS.

Write today for illustrated folder.

ELKHART BRASS MFG CO
ELKHART INDIANA

Bring Home $10.00 Easy Money

Pyrene Prize Letter Contest Pays for Stories of Good Work Done by Firemen With Extinguishers

FIREMEN know better than anyone else what fire extinguishers can do and that is why the Pyrene Prize Letter Contest is so popular. You may know of a case where an extinguisher saved a life or made a good stop. Fancy letter writing is not necessary, just tell the facts your own way. Having won a previous prize does not bar you from making another entry. The contest is sponsored jointly by the Pyrene Manufacturing Company of Newark, N. J., and VOLUNTEER FIREMEN. The first prize story this month reports a fire where a $250,000 school was saved by one foam extinguisher.

FIRST PRIZE — $10.00

E. C. HENSHAW, *Chief*

Fire Dept., New Smyrna Beach, Fla.

Foam Extinguisher Saves School

"We received a call for a fire in the Live Oak Street School basement. Upon arrival the jet in the oil burner blower was dripping and an explosion shot blazing oil all over the basement and ceiling. We opened a window and with a 2½-gallon foam extinguisher, knocked down the flames, ventilated and put out the fire in front of the boiler. We then went in and shut off the oil flow and built a dam out of sand. Three times the fire caught but with the foam tank we saved this building which cost about $250,000 and was insured for $150,000. That there was no damage to building or contents was entirely due to the foam blanket."

SECOND PRIZE — $3.00

HAROLD B. POWERS

Fire Department, Roundup, Montana

Saved Wooden Court House

"During December 1935, I was working in the Court House at Roundup, which is an all wooden building, when I heard a terrible explosion from the rear of the building. Upon looking out of the window I saw smoke coming out of the repair shop, a frame building not over 20 feet from the court house. I immediately grabbed the first extinguisher I could find and ran out to the shop. I had taken a one gallon carbon tetrachloride extinguisher, and found that a tub of gasoline used for cleaning tractor parts had exploded from a hot stove. I dragged the tub of gasoline outside and used the extinguisher to put out the fire inside the shop in a pile of wiping rags and on the ceiling. I then got a foam extinguisher from the court house and put out the tub of burning gasoline.

The gasoline explosion blew out every window in the shop and knocked down the men that were working in there. One man who was carrying some parts from the tub toward the stove was burned. If this fire had ever gotten a good start we would never have saved the building as it is a two story frame structure and very old."

THIRD PRIZE — $2.00

HOWARD W. KNUTZEN

Fire Department, Cedar Bluffs, Nebr.

Saved Rural Church

"During church services the building became filled with a haze of smoke and the odor of wood getting very hot became quite evident. I went into the school room adjoining the church and found the smoke more dense. Removing the register cover from the floor I found that the floor joists had just begun to flame. There was a one-quart carbon tetrachloride extinguisher in the school room and with this I quickly extinguished the flames.

The church is four miles from town and if it had not been for this extinguisher there would have been a total loss. The church is heated by a furnace with an automatic blower which runs until the room is sufficiently warm and then shuts off. When the blower shut off, the very hot fire in the furnace set the floor joists aflame because there was insufficient insulation between the heating pipe and the floor joists."

CONTEST RULES

1. Contestants in the Pyrene Prize Letter Contest must be members of their local fire department.
2. Letters are to describe actual experiences where an approved fire extinguisher of any make has saved lives or property.
3. Trade names may be used but will be deleted in publication. Publishers reserve the right to edit winning letters to permit publication.
4. Each contestant automatically vouches for the truth of the facts presented from his own or others' experience.
5. Only one letter may be submitted each month.
6. Letters must be legibly written in ink or typewritten on white paper, one side only. Preference will be given to letters not over 250 words in length.
7. Letters received after the 8th of the month will be judged in following month's competition.
8. Monthly prizes in cash will be: 1st, $10.00; 2nd, $3.00; and 3rd, $2.00.
9. Address contest letters to Pyrene Prize Letter Contest, National Fire Protection Association, 60 Batterymarch St., Boston, Mass.

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100 Pages

543 Illustrations

It's Chock-Full of EVERYTHING For FIRE DEPTS.

Fire Apparatus
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Fire Hose
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THE MODERN ENCYCLOPEDIA FOR PROGRESSIVE FIRE FIGHTERS

The only complete and up to date catalog printed especially for Fire Chiefs and Firemen. One hundred pages with 543 illustrations. Everything for Fire Departments accurately and truthfully described and pictured.

Full of information on all that's new in the field of Fire Fighting and EVERYTHING AT MONEY SAVING PRICES.

Even though there have been substantial increases in the cost of materials and merchandise, we have kept the prices to our customers on an even keel. Evidence of this policy is given again in this new catalog which offers everything for Fire Departments at practically the same levels as our last catalog. Thus this new catalog is valuable to those who will buy from its pages—valuable as well to those who use it as an index of what good fire fighting equipment, Apparatus, Pumps and supplies should cost, even though they may never purchase from us.

We conceive of this company not only as the largest business of its kind but as a great public institution as well. We believe we contribute to the well being, safety and health of the thousands of communities whose Officials order from us, by keeping prices moderate, as low as is consistent with quality.

We're proud of our low prices. We're proud that we have been the biggest factor for over a quarter of a century in keeping down exorbitant prices usually demanded of municipal departments. And all the while we have been constantly improving and developing everywhere possible.

We debunked the Fire Apparatus industry. Our line of Champion Fire Pumps and Champion Fire Apparatus puts adequate fire protection within reach of every community no matter the size. Fire protection for all without penalty of exorbitant prices because we don't have salesmen. We sell you direct in a friendly, economical way that saves you money.

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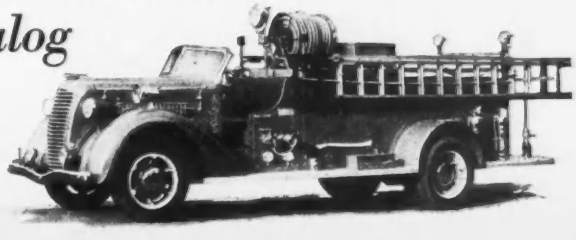
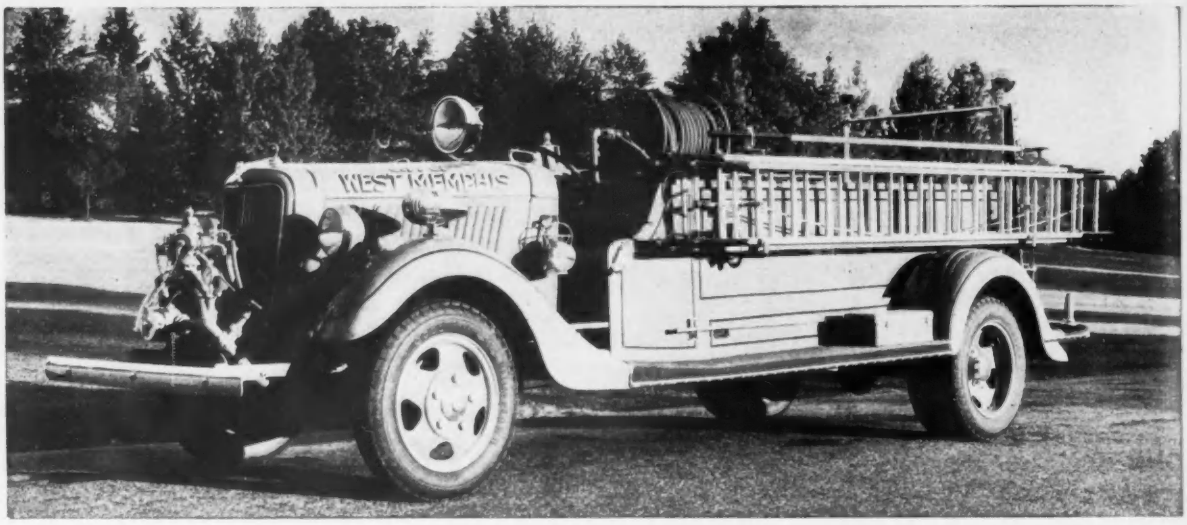




PLAN TO INCLUDE BETTER FIRE PROTECTION IN YOUR 1938 BUDGET

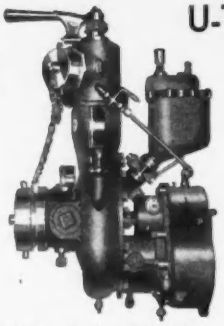
Now is the time when most cities, towns and villages are considering 1938 expenditures — making up annual budgets. An ideal time for you to get money appropriated for better fire apparatus—before that money is spent for less important things.

And thousands of Chiefs have found it easy to sell the "powers that be" on Barton Fire Pumps. Nor is it hard to understand why, for Barton Pumps enable you to have the FINEST, MOST DEPENDABLE of fire-pumping equipment, YET SAVE YOUR COMMUNITY HUNDREDS OF DOLLARS IN FIRST COST.

Real Economy With BARTON Pumps

First, because of simplified design, a Barton Centrifugal Pump costs MUCH LESS than other type apparatus. Second, because of Front-Mounting, a special expensive fire truck is NOT REQUIRED. Any size Barton Pump can be used on a standard truck and completely installed WITHOUT A SINGLE CHASSIS CHANGE—total cost but a few dollars for labor.

How can we best help you present this wonderful economy story to your community? Mail Coupon below and we will send you literature explaining Barton Pumps thoroughly. Or would you prefer to have our nearest representative call and talk to your people? No obligation, of course.



U-Type, built in 350, 400, 500 and 600-gallon sizes.

U-TYPE—*Gear Drive*

Shown above is a Barton U-Type Fire Pump, Front-Mounted and ready for service. Every U-Type Pump is regularly equipped with BUILT-IN GEAR DRIVE which permits truck motor to operate at approximately ONE-HALF pump speed. With pump wide open and discharging against 250 pounds pressure, the motor loafs along under no strain. All sizes UNDERWRITERS' TESTED—all automatically primed. The finest centrifugal fire pumps on the market.

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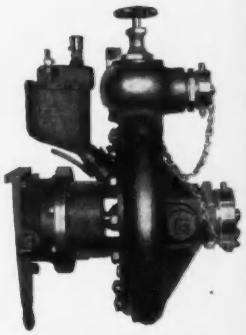
An amazing development for towns and villages which require relatively large capacity pumpers but have only limited amount of money available. They incorporate every U-Type feature and refinement except Gear Drive. All sizes UNDERWRITERS' TESTED — all automatically primed.

Also smaller Barton Fire Pumps, both centrifugal and rotary, AT STILL LOWER PRICES.



F-Type, built in 400, 500 and 600-gallon sizes.

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BATTLE CREEK, MICHIGAN . . *PUMPS AND PUMPS ONLY SINCE 1873*

Please send complete information on:

- ☐ Barton U-Type Fire Pumps, Bulletin 75
- ☐ Barton F-Type Fire Pumps, Bulletin 95
- ☐ Smaller Fire Pumps at still Lower Prices
- ☐ Have your nearest Representative call

NAME.....

ADDRESS.....

Records show that more than nine out of every ten accidents are sideswipes. Head-on accidents are the exception; sides-swipes the rule. A FRONT-MOUNTED BARTON FIRE PUMP IS OUT OF THE DANGER ZONE. With thousands of Barton Pumps in service, we know of only one ever damaged by collision. FRONT-MOUNTING an CONVENIENCE + ECONOMY + GREATER SAFETY.

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